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345 Park Avenue
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EXAMINER

CHEN, WENPENG

ART UNIT	PAPER NUMBER
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2624

DATE MAILED: 01/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/622,424

Applicant(s)

HIRANO ET AL.

Examiner

Wenpeng Chen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,5,6 and 9-24 is/are pending in the application.
- 4a) Of the above claim(s) 1,2,5 and 6 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 17-24 is/are allowed.
- 6) ☒ Claim(s) 9-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 October 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 1.

- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____

Election/Restrictions

1. Applicant's election of Group II, Claims 9-24 with traverse of restriction in Paper No. 13 is acknowledged. The traversal is on the ground(s) that there is no a serious burden on the Examiner. This is not found persuasive because Groups I and II of invention as discussed in paper #12 have different utilities. For example, Group I involves different kinds of scanning, but not Huffman coding; while Group involves a special Huffman coding without considering different kinds of scanning orders.

The requirement is still deemed proper and is therefore made FINAL.

Drawings

2. Figures 18-28 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

3. The disclosure is objected to because of the following informalities.

- The term "mage" in line 3, page 1 shall be changed to "image".
- Please spell out "PCM" in line 15, page 1.

-- Equations 1-4 in pages 3-4 are not given. Please fill them in according to the corresponding PCT application.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 9 and 13 are rejected under 35 U.S.C. 102(e) as being anticipated by Dockser (US patent 5,764,357.)

Dockser teaches a Huffman encoder for encoding DCT coefficients into Huffman codes, characterized in that it comprises:

-- storage means for storing a plurality of DCT coefficients; (element 10 of Fig. 1; column 5, line 51 to column 6, line 6)

-- read means for reading a plurality of the DCT coefficients stored in said storage means at a time; (the buses connecting element 10 and element 20 of Fig. 1; column 6, lines 7-54)

-- counting means for counting the number of consecutive invalid coefficients until a valid coefficient is encountered in the DCT coefficients read by said read means from said

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storage means and for sequentially outputting data constituted by combinations of the number of consecutive invalid coefficients and a valid coefficient; (The combination of elements 20, 30, 40, and 50 forms the counting means to output pairs of zero run length and DCT non-zero coefficient.)

-- encoding means for performing a Huffman encoding process based on the data sequentially output by said counting means to generate Huffman codes. (element 60 of Fig. 1; column 6, lines 55-67)

Dockser also teaches the corresponding method recited in Claim 13.

6. Claims 9-10 and 13-14 are rejected under 35 U.S.C. 102(e) as being anticipated by Kim (US patent 6,055,272.)

Kim teaches a Huffman encoder for encoding DCT coefficients into Huffman codes, characterized in that it comprises:

-- storage means for storing a plurality of DCT coefficients; (column 3, lines 22-29; Before quantized DCT coefficients are scanned, the coefficients must be stored in a memory. Without the storage, the zigzag scanning cannot be performed because the DCT is performed in column or row order. To scan DCT coefficients in zigzag order, the coefficients must be stored at first.)

-- read means for reading a plurality of the DCT coefficients stored in said storage means at a time; (The odd and even coefficients are input to element 10 of Fig. 2.; column 3, lines 30-42)

-- a plurality of data buses for respectively transferring a plurality of the DCT coefficients read by said read means from said storage means at a time; (the lines inputting the odd and even coefficients into element 10 of Fig. 1)

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-- a plurality of data storage means for storing input data and outputting the same in the order of input; (column 2, lines 7-14; column 4, lines 48-55; column 6, lines 8-14; Because the time for determining run length is not a constant, the values "run1", "run2", "level1", and "level2" in Fig. 2 have to be buffered for synchronized with other process, such as output from zero block detector 30, so the multiplexing of 42, 44, 46, and 48 can be meaningfully performed. Therefore, "level1" and "level2" inherently need to be stored separately in individual storage means, respectively. The passage in column 2, lines 7-14 further teaches that "level1" and "level2" shall be outputted in the order of their inputs to element 10 and thus the storage means.)

-- counting means for counting the number of consecutive invalid coefficients until a valid coefficient is encountered in the DCT coefficients read by said read means from said storage means and for sequentially outputting data constituted by combinations of the number of consecutive invalid coefficients and a valid coefficient; (element 10 of Fig. 2; column 3, lines 30-42; column 4, lines 49-55)

-- selection means for sequentially selecting and outputting data respectively output by said plurality of data storage means; (column 2, lines 7-14; column 3, lines 21-42; column 4, lines 48-55; column 6, lines 8-14; The passage in column 2, lines 7-14 further teaches that "level1" and "level2" shall be outputted in the order of their inputs to element 10 and thus the storage means. Therefore, (run1, level1) and (run2, level2) are sequentially selected and fed into VLC 5 of Fig. 1 in a single bit stream according to their order given in column 2, lines 7-14.)

-- encoding means for performing a Huffman encoding process based on the data sequentially output by said counting means to generate Huffman codes. (column 1, lines 47-53; column 3, lines 21-30; VLC unit 5)

Kim also teaches the corresponding method recited in Claims 13 and 14.

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7. Claims 11-12 and 15-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Jan (US patent 5,363,097.)

Jan teaches a Huffman decoder for decoding Huffman codes into DCT coefficients, characterized in that it comprises:

-- decoding means for performing a Huffman decoding process on Huffman codes input thereto to sequentially output data constituted by combinations of the number of consecutive invalid coefficients and a valid coefficient; (Figs. 2, 4, and 5; column 2, lines 32-54; column 5, lines 38-57; column 6, lines 11-30; The (run-length of zeros, amplitude) codeword is generated in the decoding process.)

-- a plurality of data storage means for storing data input thereto and for outputting the same in the order of input; (column 6, lines 11-68; Fig. 5; the FIFO data buffers)

-- selection means for selecting the data output by said decoding means and sequentially inputting the same to in order of said plurality of data storage means; (Fig. 5; column 6, lines 26-30; The data are segmented and distributed. The distributing action inherently comprises a selection means.)

-- generation means for generating DCT coefficients based on the data output by said plurality of data storage means and for outputting a plurality of the generated DCT coefficients at a time; (column 6, lines 11-68; Fig. 5; Because (1) the (run-length of zeros, amplitude) codewords carry information of DCT coefficients and (2) the outputs of RLDs are used for IDCT transformation, it is evidently that the RLDs generates DCT coefficients based on the outputs from the VLD.)

-- a plurality of data buses for respectively transferring a plurality of the DCT coefficients output by said generation means at a time; (Fig. 5, The output lines from the RLDs of Fig. 5 are the buses.)

-- storage means for storing a plurality of DCT coefficients; (column 3, lines 46-59; Figs. 2 and 5; In the recited standards, DCT coefficients are stored before IDCT process because the RLDs generate DCT coefficients in a zigzag order and the IDCT is performed in a row or a column. Therefore, the output from RLDs of Fig. 5 are inverse quantized and stored in a memory before IDCT.)

-- write means for writing a plurality of the DCT coefficients transferred by said plurality of data buses in said storage means at a time. (Fig. 5; The generated DCT coefficients of L1-L4 and C1-C2 are inputs to memories before IDCT through the bus lines indicated in Fig. 5.)

The above-cited passages also teach the corresponding method recited in Claims 15 and 16.

Allowable Subject Matter

8. Claims 17-24 are allowed.

The following is a statement of reasons for the indication of allowable subject matter. The prior art fails to teach the Huffman decoder of Claim 17 and the method of Claim 21 that specifically comprises the following features in combination with other recited limitations:

- detecting match between an input Huffman code and stored Huffman codes as recited;
- storing decoded data in an address indicated by the frequency of occurrence of at least the plurality of remaining Huffman codes among said plurality of Huffman codes as recited;
- generating a frequency of occurrence based on the input Huffman code as recited;
- receiving said frequency of occurrence as an address signal as recited;
- outputting decoded data from an address specified by said address signal as recited.

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Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wenpeng Chen whose telephone number is 703 306-2796. The examiner can normally be reached on 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David K Moore can be reached on 703 308-7452. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9306 for regular communications and 703-872-9306 for After Final communications. TC 2600's customer service number is 703-306-0377.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 305-4700.

Wenpeng Chen
Primary Examiner
Art Unit 2624

January 13, 2004

